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09/682,685	10/05/2001	Thomas K.F. Foo	GEMS8081.152	8976
27061 7590 12/09/2008 ZIOLKOWSKI PATENT SOLUTIONS GROUP, SC (GEMS) 136 S WISCONSIN ST PORT WASHINGTON, WI 53074			EXAMINER SMITH, RUTH S	
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BEFORE THE BOARD OF PATENT APPEALS  
AND INTERFERENCES

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*Ex parte* THOMAS K. F. FOO and ZAHY A. FAYAD

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Appeal 2008-1759  
Application 09/682,685<sup>1</sup>  
Technology Center 3700

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Decided: December 5, 2008

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*Before:* HOWARD B. BLANKENSHIP, JAY P. LUCAS, and STEPHEN  
C. SIU, *Administrative Patent Judges.*

LUCAS, *Administrative Patent Judge.*

DECISION ON APPEAL

STATEMENT OF CASE

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<sup>1</sup> Application filed October 5, 2001. The real party in interest is General Electric Co. & GE Medical Systems Global Technology Co.

Appellants appeal from a final rejection of claims 21 to 29 under authority of 35 U.S.C. § 134. The Board of Patent Appeals and Interferences (BPAI) has jurisdiction under 35 U.S.C. § 6(b). Claims 1 to 20 have been allowed.

Appellants' invention relates to a method and apparatus for producing pulses applied to a magnetic field to activate a magnetic resonance imaging (MRI) machine, and the pulses themselves. In the words of the Appellants:

The invention includes a technique for efficient multi-slice fast spin echo image acquisition with black blood contrast in cardiac imaging. The technique includes applying a non-selective inversion pulse, followed by a re-inversion pulse that is slice-selective over a region encompassing a plurality of slice selections. Execution of a series of RF excitation pulses with fast spin echo readout is timed such that signal from blood is near a null point before acquiring data for each spatial slice. For greater contrast consistency, the flip angles for the excitation pulses occurring before the null point can be reduced, and those occurring after the null point can be increased.

(Abstract, Spec., p. 15)

Claims to the method of acquisition of images using these specific pulses, and claims for the computer program and apparatus to produce the images with these pulses have been allowed. (Br. p. 2; Ans. p. 2). This application relates solely to claims for the sequence of pulses themselves. Claim 21 is exemplary:

21. A pulse sequence for use in a multi-slice MR data acquisition comprising:

a non-selective inversion pulse applicable to a slab of slices;

a slice-selective re-inversion pulse applicable to at least a number of slices in the slab of slices; and  
a series of excitation pulses applicable to the at least a number of slices in the slab of slices after an inversion time.

No prior art is relied upon by the Examiner in rejecting the claims on appeal.

### REJECTIONS

Claims 21 to 29 stand rejected under 35 U.S.C. § 101 for being directed to non-statutory subject matter.

Appellants contend that the claimed subject matter is statutory, for reasons to be discussed more fully below. The Examiner contends that each of the claims is properly rejected.

Rather than repeat the arguments of Appellants or the Examiner, we make reference to the Briefs and the Answer for their respective details. Only those arguments actually made by Appellants have been considered in this opinion. Arguments which Appellants could have made but chose not to make in the Briefs have not been considered and are deemed to be waived.

We affirm the rejection.

### ISSUE

The issue is whether Appellants have shown that the Examiner erred in rejecting the claims under 35 U.S.C. § 101. The issue turns on whether claims directed to the sequence of pulses alone are statutory.

### FINDINGS OF FACT

The record supports the following findings of fact (FF) by a preponderance of the evidence.

1. Appellants have invented a technique and apparatus for efficient multi-slice acquisition of images with enhanced contrast (ghoulishly called “black blood contrast” in the Cardiovascular Magnetic Resonance industry) in an MRI machine. (Br. p. 2, bottom). The technique uses a specified series of pulses to excite the “slices” of the subject being imaged. (Spec., ¶ 7). The advance allows for acquisition of multiple slices of the subject, said to be an advance over the prior art. (*Id.*).

### PRINCIPLES OF LAW

Appellants have the burden on appeal to the Board to demonstrate error in the Examiner’s position. See *In re Kahn*, 441 F.3d 977, 985-86 (Fed. Cir. 2006)

Laws of nature, physical phenomena and abstract ideas are excluded from patent protection. *Diamond v. Diehr*, 450 U.S. 175, 185 (1981).

### ANALYSIS

From our review of the administrative record, we find that the Examiner has presented a prima facie case for the rejections of Appellants’ claims under 35 U.S.C. § 101. The prima facie case is presented on pages 2 and 3 of the Examiner’s Answer. In opposition, Appellants argue as follows:

*Arguments with respect to the rejection  
of claims 21 to 29  
under 35 U.S.C. § 101*

Appellants argue that “[i]t is generally recognized that ‘anything under the sun that is made by man’ may be patentable with three notable exceptions: abstract ideas, laws of nature, and natural phenomena.” (Br. p. 4, middle, quoting the MPEP § 2106.IV.A.). Further, Appellants argue that the Examiner has erred, as the “Appellant has not claimed principles, but has claimed a pulse sequence, as defined by the claim limitations, which is directed to more than just RF energy and magnetism.” Appellants then join with the Examiner in stating “Additionally, the Examiner acknowledged that ‘a pulse sequence is considered to be a type of signal....’” (Br. p. 5, middle). Appellants then quote a 1980 CCPA case to argue that signal claims should be considered statutory. (E.g. *In re Breslow*, 616 F.2d 516, 519-21 (CCPA 1980)).

We are fortunate that this area of the law has been clarified since the *Breslow* case. In 2007, the Federal Circuit made it clear that a mere transitory signal is not within the four statutory classes of patentable subject matter. “A transitory, propagating signal like Nuijten's is not a ‘process, machine, manufacture, or composition of matter.’ Those four categories define the explicit scope and reach of subject matter patentable under 35 U.S.C. § 101; thus, such a signal cannot be patentable subject matter.” *In re Nuijten*, 500 F.3d 1346, 1359 (Fed. Cir. 2007). In light of that ruling, we need not consider the broader issues of whether the Appellants are claiming

a principle of nature. Appellants have stipulated that the claimed pulse sequence is a pure signal, and as such, we decline to find error in the Examiner's rejection.

#### CONCLUSION OF LAW

Based on the findings of facts and analysis above, we conclude that the Examiner did not err in rejecting claims 21 to 29 under 35 U.S.C. § 101.

#### DECISION

The Examiner's rejection of claims 21 to 29 is affirmed.

No time period for taking any subsequent action in connection with this appeal may be extended under 37 C.F.R. §1.136(a). See 37 C.F.R. § 1.136(a)(1)(iv).

#### AFFIRMED

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